

**TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A SUBMISSION UNDER 35 U.S.C. 371**

ATTORNEY'S DOCKET NUMBER

873.0132.U1(US)

U.S. APPLICATION NO. (If known, see 37 CFR 1.5)

10/533248

INTERNATIONAL APPLICATION NO.
PCT/US2003/034414

INTERNATIONAL FILING DATE
29 October 2003

PRIORITY DATE CLAIMED
29 October 2002

TITLE OF INVENTION

Low Complexity Beamformers for Multiple Transmit and Receive Antennas

APPLICANT(S) FOR DO/EO/US

Krishna Kiran MUKKAVILLI, Ashutosh SABHARWAL, Behnaam AAZHANG


Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a submission under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a submission under 35 U.S.C. 371.
3. ☐ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
4. ☐ The US has been elected (Article 31).
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c)(2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).
 - a. ☐ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
10. ☐ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/PEPA/409).
12. ☒ A copy of the International Search Report (PCT/ISA/210).

Items 13 to 23 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. ☐ A substitute specification.
18. ☐ A power of attorney and/or change of address letter.
19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 37 CFR 1.821 - 1.825.
20. ☐ A second copy of the published International Application under 35 U.S.C. 154(d)(4).
21. ☐ A second copy of the English language translation of the International Application under 35 U.S.C. 154(d)(4).
22. ☒ Express Mail Label No. EV 734 376 347 US
23. ☐ Other items or information:

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

U.S. APPLICATION NO. (if known, see 37 CFR 1.5) 10/533248		INTERNATIONAL APPLICATION NO. PCT/US2003/034414		ATTORNEY'S DOCKET NUMBER 873.0132.U1/(US)	
The following fees are submitted:				CALCULATIONS	PTO USE
24. <input checked="" type="checkbox"/> Basic national fee		\$300		\$	\$300.00
25. <input checked="" type="checkbox"/> Examination fee If international preliminary examination report prepared by USPTO and all claims satisfy provisions of PCT Article 33(1)-(4) All other situations		\$100 \$200		\$	\$100.00
26. <input checked="" type="checkbox"/> Search fee Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority International Search Report prepared and provided to the Office All other situations		\$100 \$400 \$500		\$	\$100.00
TOTAL OF 24, 25 and 26 =				\$	\$500.00
<input type="checkbox"/> Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing or computer program listing filed in an electronic medium). The fee is \$250 for each additional 50 sheets of paper or fraction thereof.					
Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof (round up to a whole)	RATE	\$	\$0.00
- 100 =	0	/50 =	0	x	\$250.00
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492(e)).				\$	\$
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	\$	\$1,250.00
Total claims	45	- 20 =	25	x	\$50.00
Independent claims	12	- 3 =	9	x	\$200.00
MULTIPLE DEPENDENT CLAIMS (if applicable) <input type="checkbox"/> + \$360.00				\$	\$0.00
TOTAL OF ABOVE CALCULATIONS =				\$	\$3,550.00
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$	\$0.00
SUBTOTAL =				\$	\$3,550.00
Processing fee of \$130.00 for furnishing the English translation later than 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$	\$0.00
TOTAL NATIONAL FEE =				\$	\$3,550.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40 per property +				\$	\$0.00
TOTAL FEES ENCLOSED =				\$	\$3,550.00
				Amount to be	\$
				Amount to be	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$ \$3,550.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Director is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 50-1924 . A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.					
NOTE: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.					
SEND ALL CORRESPONDENCE TO:					
Customer No. 29683 Harrington & Smith, LLP 4 Research Drive Shelton, CT 06484-6212 (203) 925-9400				SIGNATURE  Gerald J. Stanton NAME 46,008 REGISTRATION NUMBER	

JC14 Rec'd PTO 29 APR 2005

Express Mail No. EV 734 376 347 US
IN THE U.S. PATENT AND TRADEMARK OFFICE

In re U.S. Patent Application of:
Applicant: Mukkavilli et al.
U.S. Serial No.:
International Application No.: PCT/US2003/034414
International Filing Date: 29 October 2003
Title: Low Complexity Beamformers for Multiple Transmit and Receive Antennas
Attorney Docket No.: 873.0132.U1(US)

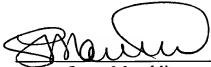
Certificate of Mailing

I hereby certify that the following correspondence:

Transmittal Letter to U.S. Designated/Elected Office
Preliminary Amendment
WO 2004/040690 A2 published application
Information Disclosure Statement with PTO-1449
International Search Report
International Preliminary Examination Report
Check for \$ 3550.00
Self addressed stamped post card

Is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, Mail Stop PCT.

Date: April 29, 2005


Lynn Maroldi